ABSTRACT

Access to private devices that are separated from the public network by firewalls and NATs is provided without reconfiguring the firewalls and NATs. A private device wishing to provide access to external devices establishes a virtual private pipe to a secure hub, which includes

5   functionality to terminate virtual pipes and to switch communications between these pipes and the public network. The secure hub assigns a secondary IP address to the private device/pipe and thereby provides the private device with a network appearance that is now beyond the firewall/NAT. External devices access the private device by addressing communications to the secondary IP address, which communications are routed to the secure hub and tunneled

10   through the pipe to the private device. The private device can also restrict access through an access control list that is enforced by the secure hub.